Bayonets and Deployment

Ever since I was old enough to read, I have been fascinated by the Civil War. As a military dependent growing up, I was lucky to travel a lot, which allowed me to continually talk my father into taking detours to see Civil War sites. While I was actually born outside of the United States (my dad was stationed in Edinburgh, Scotland after World War II), my parents are from Georgia. Travels in the South gave me a very Southern perspective on the "War of Northern Aggression." I was lucky enough to visit Andersonville, Ga., site of the Civil War prison; the battlefields around Richmond, Va.; and Chattanooga, Tenn., site of Lookout Mountain and the "Battle Above the Clouds."

Although I am an avowed Southerner, one of my heroes has always been Joshua Chamberlain, who was an academic, but had a strong urge to fight to save the Union. He volunteered to fight, and was soon made a lieutenant colonel. He fought in many battles and by July 1863, he was made a colonel. On July 2, 1863, Col. Chamberlain was at Gettysburg and was given orders to defend Little Round Top, an important position giving a commanding view of the entire battlefield. His actions during this key engagement held the Union's position and significantly contributed to the Union victory at Gettysburg, a battle that is now viewed as the turning point of the Civil War.

Several years ago, I finally got a chance to visit Gettysburg and made it a point to park my car near a rocky area called Devils Den and walk through the Slaughter Pen up towards Little Round Top. On this area, Col. Chamberlain, running low on ammunition, ordered his men of the 20th Maine to attach bayonets; he led a bayonet charge downhill against the 15th Alabama, driving them back. As a result of this and other heroic actions, Col. Chamberlain (who would be Brevet Maj. Gen. Chamberlain by the war's end) received the Medal of Honor. When the Civil War ended, Gen. Grant chose Chamberlain to receive the formal surrender of weapons and colors on April 12, 1865.

How in the world does this fit in with this issue's theme, "Systems: Fielding Capabilities?" Col. Chamberlain was able to surprise the 15th Alabama with a bayonet charge, and this element of surprise allowed them to succeed. The title of this journal is "CROSSTALK, The Journal of Defense Software Engineering." Notice the software engineering. Many times, members of the software engineering profession are a bit shortsighted about their products. It's not the software that will win the war – it's the systems capability.

Being the best shot in the world will not help you if you run low on ammunition. However, knowing that a backup capability exists – and having the training to deploy and use it – will provide you with a winning capability. Under heavy fire, running low on ammo, Col. Chamberlain was able to remember that a backup capability existed. His soldiers had the training to use the backup system, and thus win the battle.

It's the same way in the software world: we need to be able to meet the entire needs of our users, not just stop with producing stovepipe software products that are unable to adapt, integrate, and survive. As software engineers, we need to remember that our job is to help *win* the war, not just produce the software.

Winning is not just about producing a workable software system. It's about meeting and fielding complex systems that have the capability to meet the total needs of our users, including contingency and emergency conditions. It's about the management needed to see potential conditions and prepare software systems and capabilities that meet all of our users' needs.

There should be no such thing as an "unexpected need" at the software level. Requirements engineering needs to be accomplished on two levels – system requirements and software requirements. It is critical to understand the entire system requirements prior to starting software requirements.

In many cases, software design and coding starts prior to complete software requirements. It's not the "correct" thing to do, but sometimes, it's the only choice you have. However, it is absolutely critical to complete system requirements prior to software design and coding. Without complete system requirements, you can't envision the role that the software is going to fulfill in the complete system. If the conceptual design or "vision" of the system is incomplete then the role of software will probably be incomplete as well.

The path to fielding successful capabilities is to make sure that system requirements are fully thought out before assigning system capabilities to software components. This requires planning and analysis. System architects need to be motivated to uncover "elements of surprise".

Perhaps a little prodding with a bayonet would provide useful motivation. I've certainly considered it for a few select co-workers in the past!

— **David A. Cook, Ph.D.**
Senior Research Scientist
The AEgis Technologies Group, Inc.
dcook@aegistg.com

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